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I am an inventor and innovator in communication technology and was one of the first Internet Service Providers, connecting our first dialup customers to the Internet in January of 1995.

Zekes.com remains a small "mom and pop" provider giving me over 13 years of direct, hands on, day to day interaction with all aspects of Internet connectivity.

1. COMPETITION

For three years, Zekes.com was the only publicly available Internet Service Provider in Graham County, Arizona.

In 1998 two competitors entered the marketplace, Eaznet.com. a private comapny, and AZNEX, part of the local Electric Co-op. The introduction of competition was good for the consumer, and for us. We continued to grow, plowing our cashflow into improvement and innovation.

One of these innovations was wireless internet. Using spread spectrum radios in the 2.4Ghz public band, we provided broadband Internet connectivity to several customers.

Then the Incumbant (QWEST) entered the Dialup business. First, they advised all the little ISP's to hurry up and lock in the $1200 per month bargain rate for a channelized T-1 incoming line for our modems. Then they created a new tariff of $450 per T-1 to sell to themselves. Because this item was a new tariff item, they refused to honor price protection provisions in these contracts.

Deep price cuts, bundling, and a refusal to allow competitors equal access to the new customers for phone service began to erode our growth, but not cut into our customer base.

Then, broadband in the form of DSL and Cable entered our market area. We were completely cut off from access to this

technology. Indeed QWEST eliminated the tariff on unbundled copper, and then used lawyers and lobbiests to gut the unbundling provisions of the Communication Act of 1996.

Our customer base eroded from over 1000 to less than 50 as dialup users migrated to broadband.

At present, we are able to purchase wholesale Backbone connection to the QWEST DSL cloud, in QWEST markets, the customer generally pays for their own circuit between their home or business and the cloud. When someone calls QWEST to order DSL service, they are not informed at the beginning of the conversation they have the right to choose their Internet Service Provider. Instead they are sold QWEST ISP service.

We also have access to AT&T DSL, but the wholesale price is higher than their retail prices.

Again bundling, and lack of access have made us players, but not equal competitors with the Incumbants.

2. GOVERNMENT PROGRAMS

One of our early customers was a member of the Farm Bureau. Through their educational efforts, several million dollars became available to bring Internet to Rural areas.

The filing was so complicated we did not apply.

Our Competitor filed, but did not get any grants because their filing was rejected for paperwork reasons. They could have done the job, they already covered much of rural Graham County and some of western New Mexico.

A telephone company, VALLEY TELCOM, filed, promising to put conduit on every road in the county. They got the money, but proceeded to lay new fiber in downtown Safford Arizona, where broadband was already available from 4 other providers.

Rural Graham County continues to have no broadband coverage, although 3G carriers are finally entering the marketplace.

3. SPECTRUM

Although our wireless broadband product was very popular and reliable, competitors entered the marketplace with incompatible equipment, causing disruptions and loss of customers.

The primary spectrum competitor was not the other ISPs, it was the Graham County government, who deployed 802.11b in all of their PUBLIC SAFETY vehicles. From a budget standpoint, this made sense, because the mass production of WI-FI branded made them cost about 75% less than radios designed for public safety spectrum. I recall hearing that they saved $2000 to $3000 per car, with commensurate savings at the infrastructure level.

4. FUTURE OF WIRELESS NETWORKING

What has changed is the reusability of spectrum due to modern beam-forming "smart" radios.

By developing a mesh forming cooperative network protocol, and strict regulation of devices, public, private, and government can re-use the same spectrum. Interestingly this is a wireless version of the original ARPANET.

True mesh forming creates a network that is expandable, reliable, and robust. Unlike copper wire, fiber, or wireless tower to device (star) networks, there is no central point of vulnerability. Every radio can forward packets to any other radio. A natural disaster or terroristic act will minimally disrupt service.

By building GPS intelligence into these radios, huge routing tables ar not required, each radio only needs to know the direction of its neighbors. Fixed radios would be required to

transmit only focused beams. Mobile radios would be tracked by the nearest fixed station.

Public safety would use identical radios, possibly with identifying bits to prioritize their packets.

Because all devices would be required to cooperate and forward packets, every private sector addition increases the bandwidth, reach, and reliability for all users, including public safety.

5. SUGGESTIONS

A. Create rules to allow equal network access to small entities.

B. Fund development of mesh forming GPS routed radios.

C. Simplify Paperwork for the new stumulation monies to allow smaller companies to participate.

Thank you.

John Brumage